Jim Kudlinski

Health Consultation

HUGE COMPANY

ST. LOUIS, SAINT LOUIS COUNTY, MISSOURI

CERCLIS NO. MO0000602581

SEPTEMBER 30, 1997

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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CERCLIS NO. MO0000602581

Prepared by:

Bureau of Environmental Epidemiology
Missouri Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

STATEMENT OF ISSUES AND BACKGROUND

STATEMENT OF ISSUES

The Missouri Department of Health (DOH), in cooperation with the federal Agency for Toxic Substances and Disease Registry (ATSDR), has completed this health consultation to evaluate if residents living near the HUGE Company Site (a pesticide formulation company) have had or potentially could have their health adversely affected by exposure to site-related contamination found in their backyards. This health consultation will also consider possible exposure to trespassers and workers on the site's contaminated area directly north of the HUGE building, and to persons at a pre-school located west of the site.

BACKGROUND

The HUGE Company is a pesticide formulation and sales operation located at 7625 Page Boulevard in the city of Pagedale, Missouri, since 1974. On-site production consists of two types of products: a liquid spray insecticide and a floor cleaner/degreaser. HUGE also purchases liquid and solid pesticides made by other companies and repackages them into various sized containers under the HUGE name. The HUGE Company stored chemicals in three underground storage tanks (UST), located in the area immediately north of the facility, until the tanks were removed in 1994. At one time, HUGE produced more than 100 different chemical products. Reportedly, rinsates were put back into the product, so no process waste should have been generated. In addition, HUGE operates a pest control business out of this same location (1).

The site consists of approximately 1.5 acres north of the HUGE building. The area of concern includes HUGE Company property, the railroad right-of-way, and residential properties (located north of the railroad). The area is served by a public drinking water system. There are no known private wells in the area (1). Residential backyards on Mallard Drive begin approximately 100 feet from the rear of the HUGE building, with a six-foot chain-link fence separating them from the railroad right-of-way. The yards are down-gradient of the HUGE site, and only a raised-soil berm prevents surface runoff from the HUGE site and other up-gradient areas from flowing across the yards (See Figure 1). Even though the berm seems to prevent surface water from running across the yards, one resident reported that their backyard remains saturated throughout the spring (2).

The site is surrounded by light commercial, retail, and residential areas, and access is unrestricted. Businesses in the area include an auto shop, a closed gas station (August 1996 (2)), an auto electric service, numerous retail outlets, and a pre-school (1,2). The pre-school, separated from the site by a business building, is located approximately 150 feet from the contaminated soil pile on the HUGE site. The school's play area is surrounded by a chain-link fence (1,2).

Investigations of the HUGE site have been conducted intermittently since September 1982 when the Missouri Department of Natural Resources (MDNR) investigated an oil seep in the backyard of a residence along Mallard Drive.

In 1995, a contractor discovered a strong odor of pesticides and visible product on top of pooled water while excavating along the railroad right-of-way. In addition, contractor employees reported eye and throat irritation. MDNR was contacted and conducted an investigation by taking soil samples from the seep area and the excavated soil. Results of soil sample analyses from the seep area found chlordane (7 parts per million (ppm)), 2,4,5-TP (43.7 ppm), and Total Petroleum Hydrocarbons (TPH) (49,833 ppm). The same chemicals were also determined to be in the excavated soil. A follow-up investigation detected the following chemicals in soils and/or sludge waste: chlordane, 2,4,5-TP, lindane, heptachlor, dieldrin, 4,4'DDD, methoxychlor, toluene, ethyl benzene, and xylenes (1). An excavated area remains from the investigation work and a soil berm was built to block surface water flow (1,2).

On March 21, 1996, MDNR conducted another investigation and sampling to better determine the full extent of contamination. This investigation included a soil sample from each of four private yards (north of the HUGE Company Site on Mallard Street), a soil sample from the soil pile, a soil sample near the northeast corner of the pre-school, numerous samples from between the site building and railroad tracks, and a background soil sample (See Figure 1). Major contaminants found on the HUGE property and the railroad right-of-way above Missouri's Any-Use Soil Levels (ASL) were arsenic at a maximum concentration of 191 ppm and chlordane at a maximum concentration of 48.6 ppm. These were found in subsurface soil at the 18- to 24- inch depth. The ASLs for arsenic and cholordane are 11 ppm and 3.4 ppm, respectively. A background sample taken from 18-24 inches deep found arsenic was present at 13 ppm and chlordane at less than 0.002 ppm. Other pesticides and volatile organic compounds (VOCs) were detected, but not at levels of health concern (3). Surface soil is not known to have been sampled, and groundwater and air sampling is not known to have been conducted. The sample from the soil pile near the preschool contained 64.5 ppm of arsenic and 31.3 ppm of chlordane. The pile of soil is approximately 150 feet from the pre-school's playground area, but the fence surrounding the playground prevents the children from having access to the pile and to the site (1,3). The soil sample near the northeast corner of the pre-school contained 9.2 ppm of arsenic and <0.4 ppm chlordane.

Of the single samples taken from four residential yards, two of the samples were taken from 18 to 24 inches deep, one sample from 0 to 8 inches deep, and the fourth sample taken from 0 to 12 inches deep. Sample results of the residential yards indicated that arsenic was detected at a maximum of 17 ppm, barium at 142 ppm, and chlordane at 3.24 ppm. Various VOCs were also detected in two of the yards, but not at a level of health concern (1,3).

On June 17 and 18, 1997, EPA conducted a further investigation of the site. Their investigation included more sampling of the HUGE property, railroad right-of-way, and residential properties. Samples taken from the residential properties included soil samples from a depth of 0 to 3 inches (4). Results of this sampling event are not available at this time.

DISCUSSION

Long-term oral exposure to inorganic arsenic can cause a pattern of skin changes including darkening of the skin, and the appearance of small "corns" or "warts" on the palms, soles, and torso. Although these changes are not considered to be a health concern, a small number of the corns may ultimately develop into skin cancer. EPA has classified arsenic as a known human carcinogen. Other possible health effects from ingesting inorganic arsenic include a decreased production of red and white blood cells, abnormal heart rhythm, blood-vessel damage, and impaired nerve function causing a "pins and needles" sensation in the hands and feet. Inhalation of high levels of inorganic arsenic can result in a sore throat, irritated lungs, skin effects mentioned above, and an increased risk of lung cancer. Dermal contact with inorganic arsenic may cause some redness and swelling of the skin (5). At the levels of exposure occurring at the HUGE Company site, these effects would not be expected.

Most health effects in humans that may be linked to chlordane exposure are on the nervous system, the digestive system, and the liver. It is not known whether chlordane will cause cancer in humans after long-term exposure (6). As with exposure to arsenic, no major health effects would be expected for the level of contamination at this site.

In the March 1996 sampling, analyses for metals, VOCs, pesticides, and herbicides indicated only chlordane and arsenic to be at levels above health guidelines. Surface soil, groundwater, and on-site air are not known to have been sufficiently evaluated. EPA's June 1997 sampling should add additional data to evaluate the actual level of contamination in soils.

The soil pile near the pre-school contained levels of arsenic and chlordane above DOH's ASLs and ATSDR's Environmental Media Evaluation Guide (EMEG) comparison values for a child. EMEGs are guidelines used to determine if there is a need to further investigate exposure to these chemicals for their possible health effects. Levels below the EMEG are unlikely to pose a health threat. An Any-Use Soil Level (ASL) is a health-based value that represents the maximum concentration of a chemical that will always be acceptable in the soil, regardless of future land use. The pile was covered during the August 1996 DOH/MDNR site visit, thereby preventing exposure to contaminated soil/dust for trespassers and exposure to contaminated dust for children at the pre-school playground (2). During the June 1997 EPA investigation, the soil pile was found to be uncovered, allowing for the possibility of exposure to the contaminated soil/dust (5).

Results of the March 1996 residential yards sampling found similar contaminants to those on the HUGE facility. Chemicals of concern found in the residential yards include arsenic and chlordane. The maximum levels for arsenic and chlordane exceed EMEGs for a pica child (compulsion to eat dirt), but not for the normal child. However, the maximum levels found in residential yards do exceed the DOH's ASL for arsenic (11 ppm) and are almost equal to the ASL for chlordane (3.4 ppm) (See Table 1). Considering that the soil samples were taken from depths other than the 0-3 inch range, these results may not give the actual level of contamination to which residents are exposed. ATSDR considers 0-3 inches the portion of soil to which residents are mostly likely

exposed. One resident has reported that her child developed a rash after playing in their yard during the summer. Another resident has had health problems with her dogs, which are kept in the yard. Without further environmental sampling, it is difficult to attribute these health effects to exposure to site-related contaminants.

Although the contaminated area north of the HUGE Company facility does not appear to be frequented by HUGE employees, instances of construction work have been documented in the same area along the railroad track. In addition, since the area is not restricted, trespassers could be exposed to the contamination through inhalation, dermal contact, or incidental ingestion of the contaminated soil. Considering the activities and limited amount of time they would be on the area, adverse health effects are not expected.

The EPA is contemplating a Time Critical Removal Action to cleanup the on-site soils. The soils would be cleaned up to DOH's ASLs to eliminate the contamination source (7). The proposed cleanup level on the HUGE Company property to 11 ppm for arsenic and 3.4 ppm for chlordane will be protective of public health. Presently, data gaps exist regarding the level of surface soil contamination, air concentrations of contaminants, and the amount of exposure that is occurring. A data gap also exists as to whether on-site groundwater is contaminated and if there is a possible pathway to the down-gradient residential yards.

CONCLUSIONS

1. Various investigations have indicated that there are areas of soil contamination present north of the HUGE Company facility and in residential yards north of the site. Although the arsenic and chlordane levels detected in residential subsurface soils are not of an immediate health concern, they are above DOH's any-use soil levels and background levels. Considering the limited soil sampling conducted in the residential yards and at depths not applicable to exposure (soils samples were greater than 0-3 inches deep) a data gap exists as to the actual levels of contaminants to which residents may be exposed. EPA has resampled the residential yards in the 0 to 3 inch depth; however, the analytical results are not yet available.

2. EPA is considering a Time Critical Removal Action due to the elevated levels of arsenic and chlordane on site. When the clean up is conducted, it should eliminate the possible exposure pathways of inhalation, ingestion, and dermal contact with contaminated dust and surface soils by workers, neighbors, and trespassers.

3. The pile of excavated contaminated soil was found to be uncovered during the June 17 and 18, 1997 sampling event allowing for possible exposure to contaminated soil/dust for trespassers and exposure to contaminated dust for children on the pre-school playground.

4. Considering the location and elevation of the facility in reference to the residential yards, and the unknowns about the groundwater, residential yards could be affected.

5. Workers have reported health effects after being exposed to contaminated soil and seep materials during excavation work along the railroad tracks at the site.

RECOMMENDATIONS

1. When EPA's new sampling data becomes available, DOH/ATSDR will evaluate it to determine residents' possible exposure to contaminated surface soil .

2. Remediation of contaminated site soil should be conducted soon to eliminate this source of exposure.

3. Until it can be remediated, the pile of excavated contaminated soil should be kept covered to prevent possible exposure.

4. Groundwater contamination and its ability to contaminate residential yards should be further evaluated.

5. Workers should use appropriate personal protection gear when working with or excavating soils on the site.

When additional information becomes available, it will be thoroughly evaluated, and existing assessment documents will be updated to reflect any changes. DOH/ATSDR will respond appropriately to any request for additional information or action.

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Attachments:

Table 1. Soil Contamination Levels found in Mallard Drive Residential Yards (March 21, 1997) near the HUGE Company Site and Recommended Safe Health Levels.

Figure 1, HUGE Company Site Location Map.

CERTIFICATION

The HUGE Company Site Health Consultation was prepared by the Missouri Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Technical Project Officer, SPS, SSAB, DHAC

The Superfund Site Assessment Branch of the Division of Health Assessment and Consultation, ATSDR, has reviewed this Health Consultation and concurs with its findings.

Lisa C Hayes for REG

Chief, SPS, SSAB, DHAC

REFERENCES

1. Missouri Department of Natural Resources. Integrated Preliminary Assessment/Site Inspection Report, HUGE Company Site, St. Louis, Missouri. June 12, 1996.

2. Site visit by personnel of the Missouri Department of Health and Department of Natural Resources. August 19, 1996.

3. Missouri Department of Natural Resources. Sample Results of March 21, 1996 Sampling Event of the HUGE Company site. April 23, 1996.

4. Discussion of the HUGE Company site with the Missouri Department of Natural Resources Remedial Project Manager. June 26, 1997.

5. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Arsenic, Update. Atlanta: ATSDR, April 1993.

6. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Chlordane, Update. Atlanta: ATSDR, May 1994.

7. Agency for Toxic Substances and Disease Registry. ATSDR Record of Activity determining that they agreed EPA's Proposed Clean-up Levels were safe. Atlanta: ATSDR, August 26, 1996

TABLE 1

Soil Contamination Levels found in Mallard Drive Residential Yards (March 21, 1997) near the HUGE Company Site and Recommended Safe Health Levels

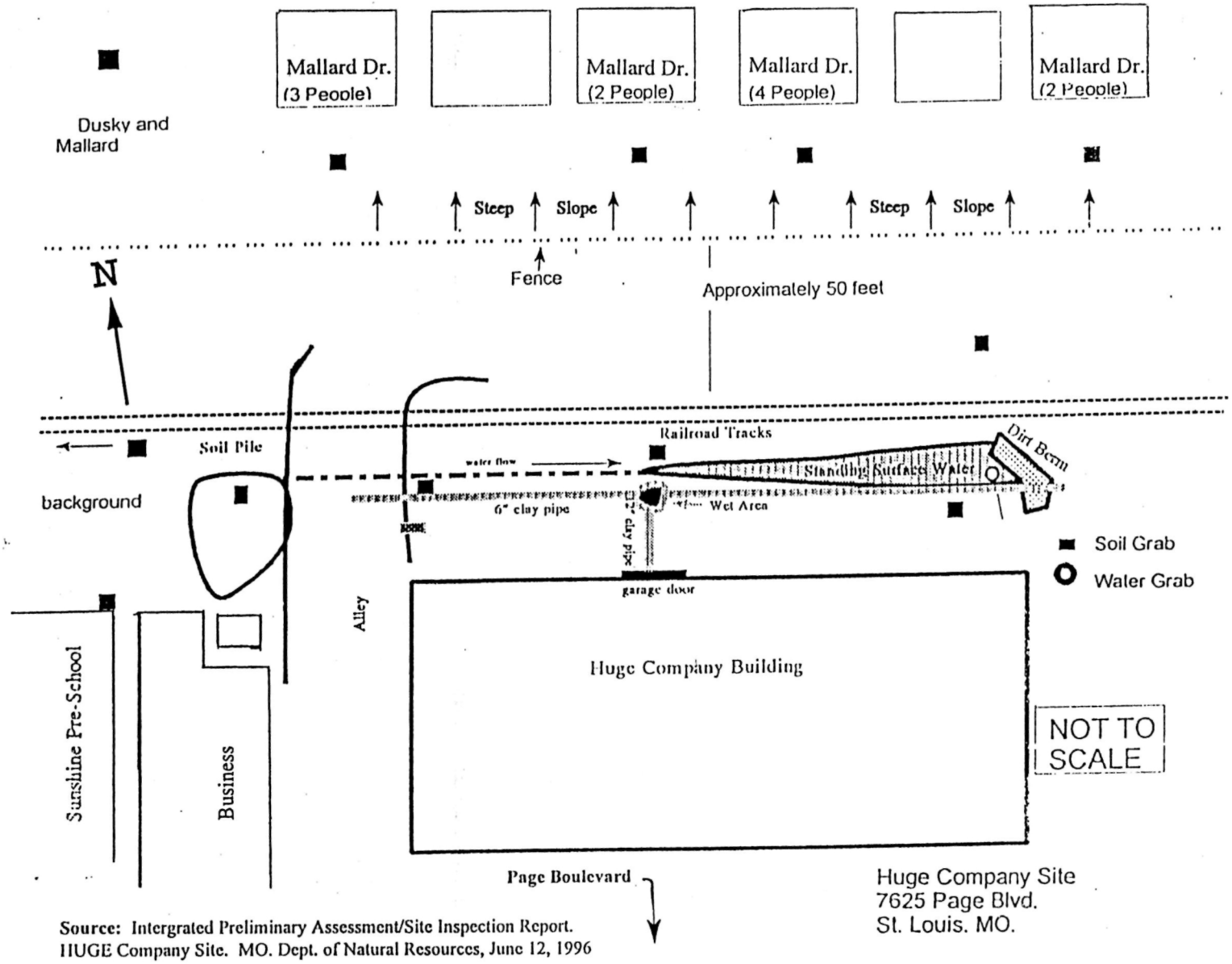
All levels are in parts per million (ppm)

Contaminant	Maximum Level Detected	Recommended Safe Health Level EMEG pica child	EMEG child	ASL
Arsenic	17	0.6	20.0	11.
Barium	142	100.	4,000.	3,900.
Chromium (Total)	34	N/A	N/A	5,600.*
Chlordane	3.24	1.	30.	3.4
cis-1,2-Dichloroethene	0.76	600.	20,000.	490.
Chloroform	0.03	20.	500.	560.
1,2-Dichloroethane	0.03	400.	10,000.	55.
Trichloroethene	0.07	4.	100.	340.

* Value used in situations where hexavalent chromium is unlikely
EMEG = ATSDR's Environmental Media Evaluation Guide
ASL = DOH's Any-Use Soil Level

Figure 1

HUGE Company Site Location Map with 1996 Sampling Points



Source: Intergrated Preliminary Assessment/Site Inspection Report. HUGE Company Site. MO. Dept. of Natural Resources, June 12, 1996

QC'd by RD